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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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DLA PIPER US LLP 2000 UNIVERSITY AVENUE E. PALO ALTO, CA 94303-2248			EXAMINER PERVAN, MICHAEL	
			ART UNIT 2629	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,007	Applicant(s) KIM, JONG-SEON	
	Examiner Michael Pervan	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/23/05, 6/15/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Knapp (US 2002/0063671).

In regards to claim 1, Knapp discloses a liquid crystal display, comprising:

a plurality of first, second, and third gate lines (Fig. 3 and paragraphs 27-28; as can be seen in the drawing, the gate lines (rows) are divided into three groups 1~K, K~K+X and K+X~M) transmitting scanning signals provided on first, second, and third areas, respectively;

a plurality of pairs of first and second data lines transmitting data voltages (Fig. 3 and paragraph 20; pairs of first and second data lines (columns)), each pair of first and second data lines separated from each other at a disconnection (break) (Fig. 3 and paragraphs 20 and 27); and

a plurality of pixels connected to the gate lines and the data lines, arranged in a matrix, and including a plurality of first, second, and third pixels provided on the first, the second, and the third areas, respectively (Fig. 3 and paragraph 19),

Art Unit: 2629

wherein the disconnections of the first and the second data lines are randomly distributed on the second area (Fig. 3 and paragraphs 27-28; disconnections (breaks) are randomly distributed.

In regards to claim 3, Knapp discloses the liquid crystal display of claim 1, wherein each pair of first and second data lines are supplied with a single data voltage during the scanning of each of the second gate lines (paragraph 29).

In regards to claim 4, Knapp discloses the liquid crystal display of claim 1, wherein the number of the first gate lines is equal to the number of the third gate lines, and the second area is disposed between the first area and the third area (Fig. 3 and paragraph 28).

In regards to claim 5, Knapp discloses the liquid crystal display of claim 4, wherein the scanning directions for the first, the second, and the third gate lines are the same (paragraph 21; since the scanning is successive from row 1~M the direction is the same for the first, the second and the third gate lines).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2 and 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp in view of Park et al (US 7,136,040).

In regards to claim 2, Knapp does not disclose the liquid crystal display of claim 1, wherein one of the first gate lines and one of the third gate lines are simultaneously scanned, and the second gate lines are scanned after the first and the third gate lines are scanned.

Park discloses a scanning method from top to bottom and another from bottom to top that occur simultaneously (Fig. 9 and col. 11, lines 36-51). If this scanning method were applied to Knapp, the claimed limitation would be met because the first gate line in the first area and the last gate line in the third area are scanned simultaneously, then the second gate line in the first area and the second to last gate line in the third area are scanned simultaneously and so on until the gate lines in the second area are scanned. Therefore, the first and third gate lines are scanned simultaneously and the second gate lines are scanned after the first and the third gate lines.

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, simultaneously scanning the first and third gate lines then scanning the second gate lines, because it minimizes the light patterns that appear in the center of the display panel.

In regards to claim 6, Knapp discloses the liquid crystal display of claim 1, further comprising:

first and second data drivers (column drivers 35A, 35B) applying the data voltages to the first and the second data lines, respectively (paragraph 29);

a gate driver (row driver circuit 30) applying the scanning signals to the first, the second, and the third gate lines (paragraph 21).

Knapp does not disclose a memory storing image data corresponding to the data voltages and supplying the image data to the first and the second data drivers.

Park discloses a memory storing image data corresponding to the data voltages and supplying the image data to the first and the second data drivers (col. 7, lines 58-63).

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, memory storing image data and supplying the image data to first and second data drivers, because the memory acts as a buffer, which improves prevention of data loss.

In regards to claim 7, Knapp does not disclose the liquid crystal display of claim 6, wherein the image data are written in the memory in synchronization with a write dock and are read in synchronization with a read dock having a frequency substantially half of a frequency of the write clock.

Park discloses the liquid crystal display of claim 6, wherein the image data are written in the memory in synchronization with a write dock and are read in synchronization with a read dock having a frequency substantially half of a frequency of the write clock (col. 8, lines 2-8).

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, read clock with half the frequency of the write clock, because it ensures that all the data in memory is read out and written to the display.

In regards to claim 8, Knapp discloses the liquid crystal display of claim 6, wherein the image data for the first pixels and the third pixels are supplied to the first

Art Unit: 2629

data driver and the second data driver, respectively, and the image data for the second pixels are supplied to both the first and the second data drivers (paragraphs 22 and 29).

In regards to claim 9, Knapp does not disclose the liquid crystal display of claim 8, wherein one of the first gate lines and one of the third gate lines are simultaneously scanned, and the second gate lines are scanned after the first and the third gate lines are scanned.

Park disclose the liquid crystal display of claim 8, wherein one of the first gate lines and one of the third gate lines are simultaneously scanned, and the second gate lines are scanned after the first and the third gate lines are scanned (Fig. 9 and col. 11, lines 36-52; since the gate lines are scanned in opposite directions, the first and third gate lines would be scanned at the same time and prior to the second scan lines.).

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, simultaneously scanning the first and third gate lines then scanning the second gate lines, because it minimizes the light patterns that appear in the center of the display panel.

In regards to claim 10, Knapp discloses the liquid crystal display of claim 6, wherein the number of the first gate lines is equal to the number of the third gate lines, and the second area is disposed between the first area and the third area (Fig. 3 and paragraph 28).

In regards to claim 11, Knapp discloses the liquid crystal display of claim 10, wherein the scanning directions for the first, the second, and the third gate lines are the

Art Unit: 2629

same (paragraph 21; since the scanning is successive from row 1~M the direction is the same for the first, the second and the third gate lines).

In regards to claim 12, Knapp discloses a method of driving a liquid crystal display including a plurality of first, second, and third gate lines (Fig. 3 and paragraphs 27-28; as can be seen in the drawing, the gate lines (rows) are divided into three groups 1~K, K~K+X and K+X~M) transmitting scanning signals provided on first, second, and third areas, respectively, a plurality of pairs of first and second data lines transmitting data voltages (Fig. 3 and paragraph 20; pairs of first and second data lines (columns)) and separated from each other at a plurality of disconnections randomly distributed on the second area (break) (Fig. 3 and paragraphs 20 and 27-8), and a plurality of pixels connected to the gate lines and the data lines and including a plurality of first, second, and third pixels provided on the first, the second, and the third areas, respectively (Fig. 3 and paragraph 19), the method comprising;

applying data voltages for the first pixels and the third pixels to the first data lines and the second data lines, respectively (paragraphs 22 and 29); and

applying data voltages for the second pixels to both the first and the second data lines (paragraphs 22 and 29).

Knapp does not disclose the method comprising:

sequentially applying scanning signals to the first gate lines and the third gate lines in pairs at the same time; and

sequentially applying scanning signals to the second gate lines.

Park discloses a scanning method from top to bottom and another from bottom to top that occur simultaneously (Fig. 9 and col. 11, lines 36-51). If this scanning method were applied to Knapp, the claimed limitation would be met because the first gate line in the first area and the last gate line in the third area are scanned simultaneously, then the second gate line in the first area and the second to last gate line in the third area are scanned simultaneously and so on until the gate lines in the second area are scanned. Therefore, the first and third gate lines are scanned simultaneously and the second gate lines are scanned after the first and the third gate lines.

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, simultaneously scanning the first and third gate lines then scanning the second gate lines, because it minimizes the light patterns that appear in the center of the display panel.

In regards to claim 13, Knapp does not disclose the method of claim 12, wherein the application of scanning signals to the second gate lines is performed after the application of scanning signals to the first gate lines and the third gate lines.

Park discloses the method of claim 12, wherein the application of scanning signals to the second gate lines is performed after the application of scanning signals to the first gate lines and the third gate lines (Fig. 9 and col. 11, lines 36-52; since the gate lines are scanned in opposite directions, the first and third gate lines would be scanned at the same time and prior to the second scan lines.).

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, simultaneously scanning the first and third gate lines then scanning

Art Unit: 2629

the second gate lines, because it minimizes the light patterns that appear in the center of the display panel.

In regards to claim 14, Knapp does not disclose the method of claim 12, further comprising:

writing image signals corresponding to the data voltages into a memory in synchronization with a write clock;

reading out the image signals for the first and the third pixels in synchronization with a read clock;

converting the read-out image signals for the first and the third pixels into the data voltages;

reading out the image signals for the second pixels in synchronization with the read clock; and

converting the read-out image signals for the second pixels into the data voltages.

Park discloses the method of claim 12, further comprising:

writing image signals corresponding to the data voltages into a memory in synchronization with a write clock (col. 8, lines 21-36);

reading out the image signals for the first and the third pixels in synchronization with a read clock (col. 8, lines 37-51);

converting the read-out image signals for the first and the third pixels into the data voltages (col. 8, lines 52-58);

reading out the image signals for the second pixels in synchronization with the read clock (col. 8, lines 37-51); and

converting the read-out image signals for the second pixels into the data voltages (col. 8, lines 52-58).

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, writing image data, reading image data and converting image data, because it is a conventional method of applying image data to pixels to produce an image on the display.

In regards to claim 15, Knapp does not disclose the method of claim 14, wherein the read clock has a frequency substantially equal to half of a frequency of the write clock.

Park discloses the method of claim 14, wherein the read clock has a frequency substantially equal to half of a frequency of the write clock (col. 8, lines 2-14).

It would have been obvious at the time of invention to modify Knapp with the teachings of Park, read clock with half the frequency of the write clock, because it ensures that all the data in memory is read out and written to the display.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

Art Unit: 2629

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVP
Sept. 25, 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

